

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

REC'D 16 DEC 2004

WIPO

PCT

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To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/EP2004/050429

International filing date (day/month/year)
02.04.2004

Priority date (day/month/year)

International Patent Classification (IPC) or both national classification and IPC
H04L12/28

Applicant
FONDAZIONE SILVIO TRONCHETTI PROVERA

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1 (a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/EP2004/050429

Box No. I - Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/EP2004/050429

Box No. V Reasoned statement under Rule 43b/s.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-22
	No: Claims	
Inventive step (IS)	Yes: Claims	1-22
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-22
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations supporting such statement

1. The following documents cited in the International Search Report are referred to in this communication:

D1: WANG K H ET AL: "Group mobility and partition prediction in wireless ad-hoc networks" ICC 2002. 2002 IEEE INTERNATIONAL CONFERENCE ON COMMUNICATIONS. CONFERENCE PROCEEDINGS. NEW YORK, NY, APRIL 28 - MAY 2, 2002, IEEE INTERNATIONAL CONFERENCE ON COMMUNICATIONS, NEW YORK, NY : IEEE, US, vol. VOL. 1 OF 5, 28 April 2002 (2002-04-28), pages 1017-1021, XP010589646 ISBN: 0-7803-7400-2

2. Statements concerning novelty and inventive step, Art. 33(2) and (3) PCT.

The present invention relates to a method (**claim 1**) of controlling access of mobile users to the shared communication medium of a wireless ad hoc network with velocity-based group mobility of network nodes and to a Media Access Control MAC layer supporting the method (independent **claim 12**).

The closest prior art is considered to be represented by the document **D1**.

D1 is related to velocity-based group mobility of network nodes in wireless ad hoc networks and discloses the feature of determining main directions of movements of network nodes. Further, **D1** implicitly discloses controlling access to a shared communication medium, since this is a standard feature of wireless ad hoc networks.

However, neither **D1** nor any other referenced prior art document indicate associating and reserving groups of communication channels of a shared communication medium to main directions of movements of network nodes.

The technical problem addressed by the present invention is to provide an efficient method for media access control in a wireless ad hoc network with velocity-based group mobility of its network nodes.

The present invention solves the above-mentioned technical problem by

associating groups of communication channels of a shared communication medium to main directions of movement of network nodes and reserving the communication channels of said groups to network nodes moving substantially in said main directions of movements.

The solution of the present invention, as disclosed by the subject-matter of **claims 1 and 12** is neither taught or suggested by **D1**, nor by any of the further available prior art references either alone or in combination.

Moreover, the solution is considered as being not obvious for a skilled person.

Hence, the subject-matter of **claims 1 and 12** is considered to be both novel and inventive over the prior art.

Further advantageous embodiments of the invention are defined by dependent **claims 2-11, and 13-22**.

Since said claims depend on **claims 1 and 12**, respectively, the subject-matter of said claims is also considered to be both novel and inventive over the prior art.

3. The subject-matter of **claims 1-22** is industrial applicable, Art. 33(4) PCT.
4. Remarks concerning formal deficiencies of the application
When entering PCT phase II (examination phase) the Applicant should consider the following formal requirements:
When filing new or amended claims the Applicant is reminded to consider the following formal requirements:
 - a) Any new independent claims should be filed in the two-part form recommended by Rule 6.3(b) PCT (e.g. clearly identifying the beginning of the characterizing portion of the claim by the keyword "characterized") having a characterizing portion which correctly reflects the prior art document **D1**.
 - b) The description should be adapted to the wording of the newly filed claims (Rule 5.1(a)(iii) PCT).
 - c) All claims should include reference signs in parentheses relating to the technical features referred therein (Rule 6.2(b) PCT).
 - d) Finally, care should be taken during revision, especially of the introductory portion of the description and of any statements of problem or advantage, not to add subject-matter which extends beyond the content of the application as originally filed (Art. 34(2)(b) PCT).

- e) According to the requirements of Rule 11.13(l), (m) PCT reference signs not appearing in the description shall not appear in the drawings, and vice versa. This requirement is not met in view of the reference sign 425 of fig. 4 and the description pages 14 to 32 referring to fig. 4.
 - f) Finally, care should be taken during revision, especially of the introductory portion of the description and of any statements of problem or advantage, not to add subject-matter which extends beyond the content of the application as originally filed (Art. 34(2)(b) PCT).
5. Remarks concerning clarity of the application
- When entering PCT phase II (examination phase) the Applicant should consider the following deficiencies of the application:

Claims 1, 3-5, and 7-22 do not meet the requirements of Art. 6 PCT for the following reasons:

- a) Independent **claim 12** is directed to a Media Access Control MAC layer. Hence, said claim does not fall within the allowed kinds of claim categories, namely process, use, product, apparatus, or system claims, see Guidelines 5.12 and 5.13.
Consequently, **claim 12** is not allowable, Art. 6 and Rule 13 PCT.
- b) **Claims 1 and 12** use the terms "mobile user" and "network user", **claims 3-5, 7-11, 13-20, and 22** use the term "network user", and **claim 21** uses the term "mobile user", which renders said claims unclear.
For the purpose of the examination, it is assumed that the above listed different technical terms relate in fact to the same technical features, namely to network user, with reference to the description.
To overcome this objection the Applicant is requested to check the set of claims for a consistent terminology and correct accordingly, see Guidelines 5.31.

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